CASIO®

Printed in Japan

OPERATION MANUAL
MANUAL DE OPERACION

CASIO QL-10

INTRODUCTION

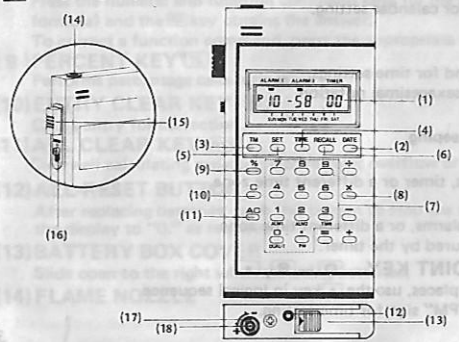
Dear customer,

Congratulations on your purchase of this unique electronic calculating-clock with built-in gas lighter.

This new product offers you all timekeeping factors (hour, minute, second, am/pm, year, month, date and day), two kinds of alarm functions, alarm-timer, time memory (a different time zone) and full calculating conveniences.

This manual will familiarize you with the many ways this highly capable unit can serve you.

1 NOMENCLATURE



(1) READ-OUT

Shows hour, minute, second, am/pm, year, month, date and day in regular timekeeping.

Indicates hour, minute, second, am/pm in alarms.

Shows the time being measured by timer.

Shows hour, minute and second in a different time zone.

Shows each entry and result in all calculations, suppressing unnecessary 0's (zeroes).

(2) DATE ENTRY KEY [DATE]

Enters year, month and date for calendar setting.
Performs date calculations.

(3) TIME ENTRY KEY [TM]

Enters hour, minute and second for time settings.
Performs time calculations in sexagesimal notation.

(4) TIME KEY [TIME]

Displays time in regular timekeeping.

(5) SET KEY [SET]

Sets the time, calendar, alarms, timer or a different time zone.

(6) RECALL KEY [RECALL]

Retrieves the time preset for alarms, or a different time zone.
Retrieves the time being measured by the timer.

(7) NUMERAL/DECIMAL POINT KEY [0]–[9], [•]

Enters numerals. For decimal places, use the [•] key in logical sequence.
The [•] key also operates the "PM" sign for time setting.

(8) FUNCTION COMMAND & EQUAL KEYS [+], [−], [×], [÷], [=]

Press the numeral and function command keys (in the same logical sequence as the formula) and the [=] key obtains the answer.
To correct a function command, press the appropriate function key.

(9) PERCENT KEY [%]

Performs percentage calculations.

(10) ENTRY CLEAR KEY [C]

Clears entry for correction.

(11) ALL CLEAR KEY [AC]

Clears all calculating registers; also releases overflow or error check.

(12) ALL-RESET BUTTON

After replacing batteries, push this button to stop the alarm buzzer and/or to revert the display to "0." as required.

(13) BATTERY BOX COVER

Slide open to the right when replacing batteries.

(14) FLAME NOZZLE

(15) IGNITION BUTTON

Push to light the lighter. The flame remains while the button is kept depressed.

(16) LOCK BUTTON

Push up and the ignition button will be locked.
(This will not affect the timing and calculating functions.)

(17) FLAME ADJUST SCREW *(Don't turn the screw unnecessarily)*

Turn clockwise or counterclockwise to decrease or increase the flame.

(18) FUEL FILLER VALVE

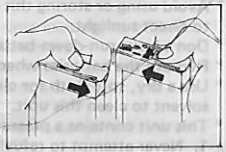
Used for refueling

2 POWER SOURCE *(For timing and calculating)*

* Two silver oxide batteries (Type: G-13, UCC357, 10L14, RW-22 or RW-44).
* Approximately 18 months continuous operation with type G-13 batteries.
* Replace batteries immediately if the time stops and/or display grows dim, as the unit is affected by insufficient battery power.

Replacement of batteries

1) Open the battery box cover by lightly pressing and sliding out the portion marked ▶ as shown in Fig. A.
2) Remove dead batteries.
3) Put new batteries as shown in Fig. B, taking care not to reverse battery polarity.
4) Replace battery box cover by pressing lightly and sliding into place as shown in Fig. A.
5) Confirm that "0." (zero) is displayed.
 If not, or if the alarm sounds, push the all-reset button with a pointed object such as a pencil, until the "0." appears.



* Be sure to replace both batteries.
* Do not leave dead batteries in the battery box as they may cause malfunctions.

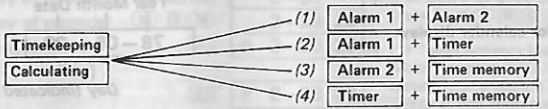
3 OPERATIONAL NOTES

* This unit is made up of precision parts. Never attempt to disassemble it.
* Never toss, drop or give the unit a severe shock.
 The keys and buttons should be depressed gently.

* Avoid using or storing this unit in a hot, cold, humid or dusty place. Also avoid exposure to direct sunlight.
* Don't leave run-down batteries in this unit.
* Remove the batteries when the unit will not be used for a long time.
* Use a dry, soft cloth for cleaning. Never use lacquer thinner, benzine or any other volatile solvent to clean this unit.
* This unit contains a pressurized combustible gas. Take the following precautions:
 1. Never attempt to refuel the lighter near an open fire or in a room where fire is used.
 2. Never keep this unit in a place where temperatures are higher than 50°C (122°F).
 3. Never leave this unit within reach of children.
 4. Avoid using the lighter for any purpose other than lighting cigarettes.
 5. After using the lighter, be sure to lock the ignition button by pushing up the lock button.
 6. Never light the lighter by holding it too much close to your face.
 7. Immediately after refuelling, the flame is unstable.
 Don't light the lighter within one minute after refuelling.
 8. Limit the flame to 30mm in a cold place (e.g., outdoors in winter). The lighter should be carried in a pocket or stored in other warm place under cold weather.

4 USAGE

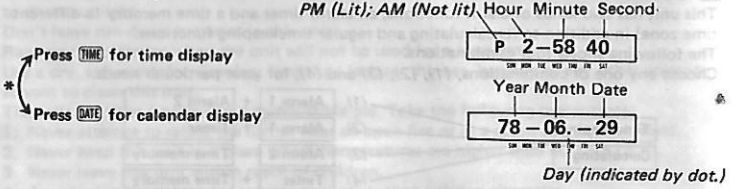
This unit has two kinds of alarm functions, an alarm-timer and a time memory (a different time zone) in addition to its calculating and regular timekeeping functions.
The following shows four combinations.
Choose any one of combinations, *(1)*, *(2)*, *(3)* and *(4)*, for your particular needs.



4-1 REGULAR TIMEKEEPING FUNCTIONS

This unit maintains accuracy within ±15 seconds per month (under normal temperature).
If the time is set correctly, it will keep good time without being affected by any of its other operations.
Since the calendar (January 1, 1901 to December 31, 2099) is permanently programmed, no date adjustment is required for irregular months or leap years.
However, after removing batteries, the present date must be set.

■ Read-out example



Indicating 2:58'40" PM, June 29 (Thu.), 1978

* Releasing DATE reconverts to time display.

■ Setting time and calendar

EXAMPLE: Setting 2:58'20" PM

It is advisable to set a time one or two minutes ahead of a time signal and press TIME on the signal.

OPERATION		READ-OUT	
①	AC	0.	
② (Entry of hours)	2 TM	2–	
③ (Entry of minutes)	5 8 TM	2–58	➡ (For entry of 2:00'20", for example, press 2 TM TM 2 0 TM in sequence.)
④ (Entry of seconds)	2 0 TM	2–58 20	
⑤ (PM sign)	•	P 2–58 20	➡ ("P" sign appears indicating PM. When pressing 1 4 TM (in 24–hour system), or entering AM, pressing of • key is not required.)
	SET	P 2–58 20	

With this operation, you are ready for time setting.
Now press TIME on the time signal from a radio, telephone or other correct time indicator.

⑥ (Time signal of 20 sec.)	TIME	P 2–58 20	(The instant the TIME key is pressed the timepiece starts with an accuracy of within 1 second.)

The timepiece will now keep time, accurately and continuously.

EXAMPLE: Setting July 16 (Sunday), 1978

OPERATION		READ-OUT	
①	AC	0.	
② (Entry of year)	7 8 DATE	78–	
③ (Entry of month)	7 DATE	78–07–	
④ (Entry of date)	1 6 DATE	7.8–07–16	➡ (Day is automatically set with entry of date. A dot appears above symbol "SUN", indicating Sunday.)
⑤	SET DATE	7.8–07–16	(Calendar setting is complete.)

* Either the time or calendar can be set first.
* If adjustment is required, follow the above key operations.
* Time and calendar settings are completely independent, so that the setting of one does not affect the operation of the other(s).

* Time can also be set by the 24-hour system by following the above example. It is necessary, however, to enter the PM sign for the time range, 12:00'00" PM to 12:59'59" PM.
* The calendar can be set by entering only the last 2 digits of the year, when the calendar range is 1901 to 1999.
 Enter the full 4 digits for the year, 2000 to 2099.
* To correct a wrong entry, press AC and perform the above procedure again.

4-2 HOW TO USE ALARM *(In combination (1), (2) or (3))*

Once alarms (Alarm 1 and/or Alarm 2) are set, the electronic buzzer sounds for 10 seconds at each preset time until cleared.

■ Setting alarm

Alarm settings (including second intervals) can be entered in the same way as regular time setting.

Example: Setting Alarm 1 to 6:30'00" AM
Setting Alarm 2 to 11:00'00" PM

OPERATION		READ-OUT
	AC	0.
(Entry of hours)	6 TM	6–
(Entry of minutes)	3 0 TM	6–30
	SET	6–30
		ALARM 1 ALARM 2 TIMER
(Entry of alarm No.)	1	6–30 00 ➡ (Alarm sign "–" appears under symbol "ALARM 1" indicating Alarm 1 is set.)
	AC 1 1 TM	11–
(PM sign)	• SET	P11–
		ALARM 1 ALARM 2 TIMER
(Entry of alarm No.)	2	P11–00 00 ➡ (Alarm sign "–" appears under symbol "ALARM 2" indicating Alarm 2 is set.)

With this operation, the alarm setting is complete and the electronic buzzer sounds at 6:30'00" AM and/or at 11:00'00" PM every day.

* After setting the alarm, press TIME for the regular time display.
* To stop the buzzer while sounding, press RCL key.

■ Checking alarm time

To retrieve preset alarm time for checking, press RCL 1 (or 2) in sequence.

Example:Checking Alarm 1

OPERATION	READ-OUT
RCL 1	–6–30 00

■ Changing or clearing alarm setting

The preset alarm time can be changed by new alarm settings.
To clear alarm setting, press AC SET 1 (or 2) in sequence.

Example: Clearing Alarm 2

OPERATION	READ-OUT
AC SET 2	0. (When alarm setting is cleared, the respective alarm sign "–" disappears.)

4-3 HOW TO USE ALARM-TIMER *(In combination (2) or (4))*

Once the Alarm-timer is set, countdown starts and the electronic buzzer sounds for 10 seconds at the predetermined setting.

■ Setting timer

Timer can be set up to a maximum of 23 hours 59 minutes 59 seconds.

Example: Setting timer for 30 minute periods.

OPERATION	READ-OUT	
AC	0.	
(Entry of time) 0 TM 3 0 TM	0–30	
	ALARM 1 ALARM 2 TIMER	
(Start) SET 3	0–29 59	➡(The instant the timer starts, the timer sign "–" under symbol "TIMER" begins flashing.)
(Electronic buzzer sounds for 10 seconds and the timer is automatically cleared.)	0–00 00	➡(The moment timing reaches "0", the timer sign disappears.)

* After setting the timer, press TIME for the regular time display.
* To stop the buzzer while sounding, press REAL key.
* The timer sign stops flashing on the regular time display, and when Alarm 1 or a different time zone is retrieved (in combination *(2)* or *(4)*).
* To retrieve the time being measured, operate REAL 3.

■ Changing or clearing timer setting

The timer can be changed by new timer settings.
To clear timer setting, press AC SET 3 in sequence.
When timer setting is cleared, the timer sign "– " disappears.

4-4 HOW TO USE TIME MEMORY *(in combination (3) or (4))*

Time memory (a different time zone) may be utilized for keeping time in another location, in addition to local time.
This convenient function allows you to keep time of two locations when travelling from one time zone to another.

Example: What time is it in Paris? (Suppose you are in New York)

OPERATION	READ-OUT	
* AC TM +	9–17 26	(9:17'26" AM in New York)
2 4 TM +	33–17 26	
(Entry of time difference) 6 TM =	39–17 26	
(Start) SET 0	15–17 26.	➡ (The moment time memory starts, the dot in the first column begins flashing.)
	:	

Note: This operation takes approx. 5 or 6 seconds, which will mean a difference of 5 or 6 seconds in the new time reading.

* Present time (24-hour display) can be displayed by pressing TM after AC or C key.

Example: What time is it in Rome? (Suppose you are in Tokyo).

OPERATION	READ-OUT	
AC TM +	17–59 00	(5:59'00" PM in Tokyo)
2 4 TM – 8 TM =	33–59 00	
(Start) SET 0	9–59 00.	
	:	

* After setting time memory, press TIME for the regular time display.
* The time memory sign (dot in the first column) stops flashing on the regular time display, and when the time being measured by timer is retrieved (in combination *(4)*).
 Note that the sign does not appear when Alarm 2 is retrieved (in combination *(3)*).
* To retrieve time memory, operate RCL 0.

■ Changing or clearing time memory

The time memory can be changed by new time memory settings.
To clear time memory, press AC SET 0 in sequence.

4-5 CALCULATION EXAMPLES

The calculating mode is activated by pressing AC.
Calculations do not affect the settings of the timepiece, alarm, alarm-timer or time memory.

* Should the buzzer for alarm or timer sounds during calculation, stop further calculation. After the buzzer stops, you can continue calculations.
* Overflow is indicated by the "*E*" sign, and stops further calculation. To release the locked registers caused by the overflow check, press AC.

Overflow occurs:

(1) When the integer part of an answer, whether intermediate or final, exceeds 8 digits (7 digits for negatives).
(2) When an answer of a date calculation is beyond the programmed calendar range (i.e., January 1, 1901 to December 31, 2099).
(3) When an unreasonable operation is performed in date calculations.

In case of (1), however, the significant digits of the answer are displayed and the decimal point indicates that the true decimal position is 8 digits to the right.

EXAMPLE	OPERATION	READ-OUT
1234567 x 10000	AC 1234567 ×	1234567.
= 12345670000	10000 =	123.4567E
		Answer reads: 12345670000
■ Basic calculations		
	AC	0.
741 − 258 + 963 = 1446	741 − 258 + 963 =	1446.
45.6 x 78 ÷ 12 = 296.4	45 • 6 × 78 ÷ 12 =	296.4
(12 + 3 − 45.6) x 9876 ÷ 5 = −60441.12	12 + 3 − 45 • 6 × 9876 ÷ 5 =	−60441.12
(−36) x 7 = −252	AC − 36 × 7 =	−252.
■ Constant calculations		
23 x 3.3 = 75.9	3 • 3 × × 23 =	75.9
116 x 3.3 = 382.8	116 =	382.8
963 ÷ 12 = 80.25	12 ÷ ÷ 963 =	80.25
2580 ÷ 12 = 215	2580 =	215.

* For addition/subtraction, the first entry is set as a constant in the same way as the above operations.
* The constant is released by performing a normal calculation.
* Powers and reciprocals can be obtained by the use of the constant function.

EXAMPLE	OPERATION	READ-OUT
$1.5^2 = 2.25$	1 ⊡ 5 ⊗ ⊗ =	2.25
$1.5^3 = 3.375$	=	3.375
$1.5^4 = 5.0625$	=	5.0625
$\frac{1}{4} = 0.25$	4 ÷ ÷ 1 =	0.25
$\frac{1}{4^2} = 0.0625$	=	0.0625
$\frac{26}{12+45} = 0.4561403$	12 + 45 ÷ ÷ 26 =	0.4561403

EXAMPLE	OPERATION	READ-OUT
■ Percentage calculations		
12% of 1500 180	1500 ⊗ 12 %	180.
Percentage of 660 against 880 75%	660 ÷ 880 %	75.
* The constant capability is utilized in these percentage calculations.		
15% add-on of 2500 2875	2500 ⊗ 15 % +	2875.
25% discount of 3500 2625	3500 ⊗ 25 % −	2625.

■ Time calculations

* Read-out example

 63−52 41 Equals 63 hours 52 minutes 41 seconds

* The range for sexagesimal notation is from minus 9 hrs. 59 mins. 59 secs. to 99 hrs. 59 mins. 59 secs.
 When an answer, whether intermediate or final, is outside the above range, it converts to decimal notation.

* When the hour is 0 (zero), entry of 0 is required.
* Constant function can be used in time calculations.

	EXAMPLE			OPERATION	READ-OUT
	1 hour	20 minutes	30 seconds	1 TM 20 TM 30 +	1—20 30
+	8 hours	8 minutes	10 seconds	8 TM 8 TM 10 =	9—28 40
	9 hours	28 minutes	40 seconds		
	1 hour	0 minute	32 seconds	1 TM TM 32 −	1—00 32
−		45 minutes		0 TM 45 =	0—15 32
		15 minutes	32 seconds		
	5 hours	30 minutes x 300 = 1650		5 TM 30 × 300 =	1650.

Present time (24-hour display) can be recalled by pressing TM after a function command, AC or C key and this applies for any time calculation.

EXAMPLE	OPERATION	READ-OUT
What time will it be 6 hours 30 minutes from now: 4:46'23" PM	6 TM 30 +	6—30 00
	TM	16—46 23
	=	23—16 23

("P" sign does not appear for 24-hour display.)

(Equals 23:16' 23")

■ Date calculations

* Read-out example

78 — .07 — 25 Equals July 25 (Tuesday), 1978.

Day is indicated by dot.

* Input for date calculation is limited to January 1, 1901 to December 31, 2099.
* Date calculations are computed by using only the last 2 digits of the year, when the calendar range is 1901 to 1999.

Enter full four digits for years, 2000 to 2099.

* Constant function can be used in date calculations.

EXAMPLE	OPERATION	READ-OUT
What will the day of the week be on Jan. 1, 1980?	80 DATE 1 DATE 1 DATE	80 – .01 – 01 (Tuesday)
What will the day of the week be on Jan. 1, 2000?	2000 DATE 1 DATE 1 DATE	00 01 0.1 (Saturday)
How many days are there from June 14 to Sep. 2, 1978?	78 DATE 9 DATE 2 DATE − 78 DATE 6 DATE 14 DATE =	78 – 09 – 0.2 80.
What date and day of the week will the 150th day from May 14, 1978 be?	78 DATE 5 DATE 14 DATE + 150 =	7.8 – 05 – 14 78 – 1.0 – 11 Oct. 11 (Wed.), 1978
What date and day was it 90 days prior to Aug. 17, 1978?	78 DATE 8 DATE 17 DATE − 90 =	78 – 08. – 17 78 – 05 – .19 May 19 (Fri.), 1978

* The calendar display can be shown by DATE after function command, AC or C key and this applies for any date calculation.

EXAMPLE	OPERATION	READ-OUT
What date and day of the week was the 90th day before today? (Assuming today is July 10, 1978.)	AC DATE − 90 =	78. – 07 – 10 78 – .04 – 11 April 11 (Tue.), 1978

4-6 DESCRIPTION OF THE LIGHTER

The lighter is completely independent of the timing and calculating functions. Release the lock button to use the lighter.

■ How to light the lighter and put it out

1. Push down the lock button.
2. Depress the ignition button until a click is heard.
 To keep the flame on, keep the ignition button depressed; release to extinguish the flame.
3. After extinguishing, always lock the ignition button.

■ Flame adjustment

The flame can be adjusted by turning the flame adjust screw with your fingernail. Turn it clockwise or counterclockwise to make the flame smaller or larger. Normal flame adjustment is 20 – 30 mm.
Never attempt to turn the flame adjust screw too hard using a screwdriver, etc., or gas leakage may result.

■ Refuelling

Hold this unit with the fuel filler valve up, insert a gas cylinder into the valve, and press it hard. Don't continue pressing hard too long, or gas may spurt out.

5 SPECIFICATIONS

■ TIMEPIECE

Crystal oscillator frequency: 32,768 Hz
Accuracy: Within ±15 sec. per month (Normal temp.)
Read-out: Digital display of hour, minute, second, am/pm, month, date and day of the week (on double display).
Calendar: All date patterns, such as month lengths, leap years, day-date sequences, permanently programmed for adjustment-free use.

■ ALARM

Time position: 2
Buzzer: Electronic buzzer

■ ALARM-TIMER

Time setting: 1 (Up to 23 hrs. 59 mins. 59 secs.)
Timing unit: 1 second
Read-out: Digital display of hour, minute and second
Buzzer: Electronic buzzer

■ TIME MEMORY

24-hour system digital display of hour, minute and second.

■ CALCULATOR

Abilities: Four basic functions including constants, percentages, time calculations, date calculations.

Capacity: Four basic functions — 8 digits
Time calculations — Up to 99 hrs. 59 mins. 59 secs.
Date calculations — 1901 — 2099

Overflow check: Indicated by an *"E"* sign, locking the calculator.

Decimal point system: Floating

■ TYPE OF DISPLAY

Liquid crystal

■ MAIN COMPONENT

One chip C-MOS-LSI, crystal oscillator (tuning fork type)

■ POWER CONSUMPTION

0.026 W

■ POWER SUPPLY

Two silver oxide batteries (Type: G-13, UCC357, 10L14, RW-22 or RW-44)
The unit gives approximately 18 month continuous operation on type G-13 batteries.

■ LIGHTER

Igniter: Soft piezoelectric system
Ignition load: Approx. 1.5 kg (±0.5 kg)
Durability: Approx. 30,000 times of ignition
Gas capacity: 2.1 grams maximum (when the lighter is used approximately 630 times, for 5 seconds each time and with a 30 mm-long flame.)

■ PERMISSIBLE AMBIENT TEMPERATURES FOR TIMING AND CALCULATING

0°C — 40°C (32°F — 104°F)

■ DIMENSIONS

12.7mmH x 57.7mmW x 102.5mmD (1/2"H x 2-3/8"W x 4"D)

■ WEIGHT

103g (3.6 oz) including batteries.